REMARKS

This Amendment responds to the Office Action dated May 5, 2006. By way of this response, independent claims 1, 7 and 12 have been amended to more precisely define Applicant's invention. Thus, claims 1-12 are pending and at issue in the above identified patent application.

In part, claims 1, 7 and 12 have been amended to positively recite an elliptically-shaped sparger placed within a duct to reduce aerodynamic resistance of the sparger and a back-pressure upstream from the sparger. This subject matter is supported by the application as originally filed, and specifically, Figures 2B and 3-6 and paragraphs [0007] – [0008] and [0029] – [0034]. Thus, no new matter has been added by the amendments to the claims.

In view of the foregoing amendments and the following remarks, reconsideration of the application is respectfully requested.

35 U.S.C. 102(b) Rejections

In the present office action, claims 1, 7 and 12 are rejected under 35 U.S.C. §102 as being anticipated by Bervig (US 4,392, 062). Applicant respectfully traverses these rejections. As now amended, claim 1 recites "a sparger ... comprised of a housing having *an elliptical shape defining a substantially similar leading edge and trail edge, the housing forming* an interior chamber for receiving a second fluid flow having an associated pressure higher than the first fluid flow wherein the housing *shape provides a substantially reduced back pressure* as encountered by the first fluid flow..." Similarly, claim 7 positively recites, in part, a noise abatement device for turbine bypass in air-cooled condensers comprising "a plurality of spargers adapted for placement within a duct having a first fluid flow, the first fluid flow being substantially parallel to a longitudinal axis of the duct...[wherein]... the at least one of the plurality of spargers [has] *an elliptical shape defining a substantially similar leading edge*

and trailing edge and [is] collinearly arranged along the longitudinal axis to substantially reduce the aerodynamic resistance of the spargers *with respect to the first fluid flow thereby providing a substantially reduced a back pressure upstream from the at least one of the plurality of spargers within the duct."* Lastly, claim 12 has been amended to recite, in part, a sparger with a housing ... wherein the housing is *elliptically* shaped *to define substantially similar leading and trailing edges of the sparger to* have an aerodynamic profile *such that the aerodynamic resistance is substantially reduced* as encountered by the first fluid flow *to reduce a back pressure upstream from the sparger*.

As known to those skilled in the art, Bernoulli's Law describes fluid pressure as being inversely proportional to fluid velocity. One of ordinary skill in the art can appreciate that the back pressure within a duct or pipe is directly related to the aerodynamic resistance or drag presented by a structure within the pipe, such as the spargers, and particularly, multiple spargers in certain applications. As described in Applicant's pending application, spargers and diffusers known in the art, including the airfoils in the cited reference, present a relative large cross-sectional area to the fluid flowing thereby. *See* para. [0029]; *see also* FIG. 2A. It is well understood by one of ordinary skill in the art that the obstruction presented by the relatively large cross-sectional area, such as conventional spargers [42a-c], as well as the Bervig airfoils [45] and [90], create an impediment to fluid flow, forcing substantial flow separation and increasing the fluid pressure or back-pressure upstream from the spargers/airfoils.

Applicant's aerodynamic sparger [44a] recited in claim 1 substantially reduces the fluid resistance, and therefore the back-pressure, within the turbine exhaust duct [38] by splitting the fluid flow about a leading edge [53a] of an airfoil-shaped sparger as shown in FIG. 3. It will be understood by one of ordinary skill in the art that the symmetric shape of

the leading edge [53a] and trailing edge [53b] provides a narrow cross-section within the duct [38] and reduces the overall aerodynamic resistance, and therefore the back pressure, within the duct [38]. Also, as shown in Figure 2B, the collinear array of three aerodynamic spargers [44a-c] of the noise abatement device of claim 7 maintains maximum flow capacity while minimizing flow restriction. *See* para. [0030]. The combination of the aerodynamic shape and collinear placement of the spargers [44a-c] promotes efficient fluid flow transitions from each sparger along the respective trailing edges [54a-c], ultimately rejoining at the trailing edge [54c] of the last aerodynamic sparger [44c]. *Id; see also* para. [0032].

Applicant respectfully submits that Bervig does not explicitly or implicitly teach a sparger or a method as recited by any of claims 1, 7 or 12. Specifically, the teachings of Bervig are limited to an airfoil that minimizes the back pressure experienced by a low-density fluid, such as a gas, within the interior of the airfoil as it is injected into a high-density fluid, such as a liquid. That is, one of ordinary skill in the art understands that Bervig teaches using Bernoulli's Principle to reduce the possibility of condensing the injected gas in order promote fluid circulation of a closed loop. With respect to the airfoil shape and the reduction of any resulting back pressure, the teachings of Bervig are wholly dissimilar to Applicant's claimed invention.

First, the airfoil [45] or [90] of Bervig is not elliptical (i.e., an ellipse is formed by moving a point along a path such that the sum of distances from two focal points remains constant), and therefore, does not define substantially similar leading and trailing edges, as now claimed. As shown in Bervig, Figures 3-6 and 9 illustrate an airfoil [45] that is non-symmetric in form including a broad leading edge relative to the narrow trailing edge. Most importantly, Bervig specifically teaches the non-symmetric leading and trailing edges to advantageously reduce the fluid pressure across the surface of the airfoil in order to promote

an increase in the pressure differential across the airfoil sides [50] to produce a corresponding decrease in back pressure with respect to the interior [54] of the airfoil [45], not with respect to fluid flow upstream of the airfoil [45]. *See* col. 3, lines 8 – 12; *see also* col. 5, lines 15-30. Further, the teachings in Bervig do not contemplate, suggest or imply any other type of airfoil structure. Second, one of ordinary skill in the art can readily appreciate that the increase in cross-sectional area of the Bervig airfoil cannot reduce back pressure experienced by the fluid flowing through the primary pipeline, such as the expander [34] or the downcomer leg [15] (i.e. across the surface of the airfoil). Quite the opposite, the teachings of Bervig would create a structure that would present a substantial aerodynamic restriction in such an application. That is, Bervig instructs the placement of the plurality of airfoils [45] with broad leading edges across the fluid flow to maximize gas dispersion in order to promote fluid circulation. Applicant respectfully asserts that such a configuration would substantially increase the back pressure experienced within the expansion chamber [34]/downcomer leg [[15], thus teaching away from Applicant's invention, as now claimed.

Quite simply, Bervig does not teach or suggest a sparger and/or method as recited by any of pending claims 1-12. Accordingly, for at least the reasons set forth above, it is respectfully submitted that newly amended claims 1, 7 and 12 are not anticipated by Bervig, and as such, these independent claims and the associated dependent claims should now be allowed.

35 U.S.C. 103 Rejections

The Office Action further rejects claims 2-4, 6, 8, 10 and 11 under 35 U.S.C. 103(a) as being unpatentable over Bervig in view of Wears et al. (US 6,026,859) and claims 5 and 9 under 35 U.S.C. 103(a) as being unpatentable over Bervig in view of Wears et al. and in further view of Sheriker (US 6,739,426). Applicant respectfully traverses these rejections.

Applicant submits that in order to establish a proper a *prima facie* case of obviousness, three fundamental criteria must be met: 1) there must be a suggestion or motivation in the references themselves or in the knowledge generally available to one of ordinary skill in the art to modify the reference or to combine reference teachings; 2) there must be a reasonable expectation of success; and 3) the prior art reference(s) must teach or suggest all the claim limitations. Based upon the teachings of the cited prior art, Applicant respectfully submits that neither the first nor the third criteria have been met, and as such, no *prima facie* case of obviousness has been established.

As is known, to support the inference that Applicant's claimed invention is obvious with respect to the cited references, the references must either be expressly or impliedly suggested the claimed invention or within the office action, a convincing line of reasoning must be presented as to why one of ordinary skill in the art would have found the invention, as claimed, to have been obvious. *See Ex parte Clapp*, 227 USPQ 972, 973 (Bd. Pat. App. & Inter. 1985). Applicant respectfully submits that newly amended independent claims 1, 7 and 12 and the associated dependent claims are clearly distinguished from the cited references and are not obvious. Specifically, the primary reference, Bervig, does not expressly or impliedly teach or suggest a reduction of the back pressure experienced by a fluid flow within a duct as claimed by Applicant. As discussed above and taught within Bervig, one of ordinary skill in the art readily recognizes that the geometry of the airfoil [45] and the placement of the airfoil [45] within the expansion chamber [34]/downcomer leg [15] actually increase fluid resistance with respect to the primary fluid flow [12]. Applicant asserts that there can be no suggestion or motivation of Applicants invention when the cited references clearly teach away from Applicant's claims, as now amended. It is improper to combine references where the references teach away from their combination. *In re Grasselli*, 713 F.2d

731, 743, 218 USPQ 769, 779 (Fed. Cir. 1983). *See also*, M.P.E.P. § 2145. If a proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification. *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984). Additionally, if the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious. *In re Ratti*, 270 F.2d 810, 123 USPQ 349 (CCPA 1959). *See also*, M.P.E.P. § 2143.01. Applicant respectfully submits that changing the configuration of the airfoil in Bervig would modify the teachings such that the dispersion principles proposed by Bervig would change the operation of the reference, and as such, would not be proper and therefore a *prima facie* case of obviousness has not been established.

Further, with regard to the present amendments, Applicant respectfully asserts that no convincing line of reasoning exists to make a combination of the references. The prior art must disclose at least a suggestion of an incentive for a claimed combination of elements in order to establish a *prima facie* case of obviousness. As previously discussed, the Bervig reference teaches away from Applicants invention by instructing one skilled in the art to fashion an airfoil that will create increase an upstream back pressure to advantageously reduce a back pressure within the air foil. One skilled in the art would not reasonably rely upon such teachings of Bervig to lower the back pressure experienced by the fluid in the primary flow path. Further, the Wears and Sherikar references relate to fluid pressure reduction, and more specifically, to controlling the pressure reduction to reduce fluid noise. Quite the opposite, the Bervig reference is creating a disturbance within a fluid flow stream - introducing aerodynamic noise – to promote fluid circulation in a closed system. Thus, one

or ordinary skill in the art would not look to combine such references. Quite simply, no such suggestion for combination is apparent or can be made from the cited references, and consequently, the obviousness rejection must be withdrawn. *See In re Sernaker*, 217 USPQ 1 (Fed. Cir. 1983); *see also Ex parte Clapp* at 973.

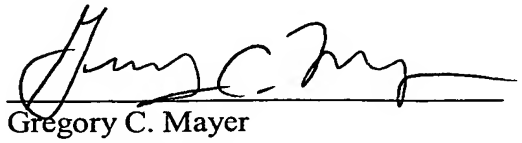
Applicant respectfully submits that the rejections under 103(a) have been overcome and claim 2-6, 8-10 and 11 are now in condition for allowance.

CONCLUSION

For the reasons stated above, Applicant submits that the specification and claims are in proper form and clearly define patentability over the prior art. Therefore, reconsideration of the application is respectfully requested. If, in the opinion of the Examiner a telephone conference would expedite prosecution of the subject application, the Examiner is invited to call the undersigned attorney. The Commissioner is directed to charge or debit any additional fees or refunds required, to Deposit Account No. 13-2855 of Marshall, Gerstein & Borun LLP.

Respectfully submitted,

MARSHALL, GERSTEIN & BORUN LLP

By: 

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